

CLAIMS

What is claimed is:

1. A guide system for resecting a bone through incisions of the type utilized for arthroscopic procedures, the guide system comprising:

5 a first alignment pin configured to be inserted through one of the incisions into a bone in a first orientation;

a second alignment pin configured to be inserted through one of the incisions into the bone in a second orientation;

a wire saw; and

10 wherein the first alignment pin and the second alignment pin are configured and oriented to define a resection surface of reference through which the bone is to be resected and the wire saw is configured to be inserted through at least one of the incisions to be guided by the first and second alignment pins while being moved to resect the bone.

15 2. The apparatus of claim 1, wherein the first alignment pin has a length sufficient that the first alignment pin extends completely through the bone with one tip extending beyond the bone on a first side and the second tip extending beyond the bone on the opposite side and the second alignment pin has a length sufficient that the second alignment pin extends completely through the bone with one tip extending beyond the bone on a first side and the second tip extending beyond the bone on the opposite side.

20 3. The apparatus of claim 2 wherein the resection surface of reference is a plane.

4. The apparatus of claim 3 and further comprising a guide block formed to include a first guide hole extending through the block, the first guide hole being sized to receive a drill sized to form a hole in the bone sized to receive the first alignment pin.

5 5. The apparatus of claim 4 wherein the first alignment pin has a length sufficient that the first alignment pin extends completely through the bone with one tip extending beyond the bone on a first side and the second tip extending beyond the bone on the opposite side and into the first guide hole when the guide block is positioned on the opposite side of the bone.

10 6. The apparatus of claim 4 wherein the guide block is formed to include a first saw guide and a second saw guide said first and second saw guides being positioned to guide the saw along the resection plane of reference when the saw is received in the saw guides.

7. The apparatus of claim 6 wherein the first alignment pin has a length sufficient that the first alignment pin extends completely through the bone with one tip extending beyond the bone on a first side and the second tip extending beyond the bone on the opposite side and into the first guide hole when the guide block is positioned on the opposite side of the bone.

8. The apparatus of claim 5 wherein the guide block is formed to include a second guide hole extending through the block, the second guide hole being sized to receive a drill sized to form a hole in the bone sized to receive the second alignment pin, the second guide hole being oriented with respect to the first guide hole to define a plane therewith.

9. The apparatus of claim 8 wherein the second alignment pin has a length sufficient that the second alignment pin extends completely through the bone with one tip extending beyond the bone on a first side and the second tip extending beyond the bone on the opposite side and into the second guide hole when the guide block is positioned on the opposite side of the bone.

10. The apparatus of claim 9 wherein the guide block is formed to include a first saw guide and a second saw guide said first and second saw guides being positioned to guide the saw along the resection plane of reference when the saw is received in the saw guides, the first alignment pin is received in the bone and the first guide hole and the second alignment pin is received in the bone and the second guide hole.

11. The apparatus of claim 10 wherein the first saw guide, second saw guide, first guide hole and second guide hole define a plane.

12. The apparatus of claim 9 wherein the guide block is formed to include a third guide hole extending through the block, the third guide hole being sized to receive a drill sized to form a hole in the bone sized to receive an alignment pin, the third guide hole being oriented with respect to the first guide hole to define a plane therewith oriented at an angle with respect to the plane defined by the first and second guide holes and further comprising a third alignment pin configured to be inserted through a third incision into the bone in a third orientation, the third alignment pin having a length sufficient that the third alignment pin extends completely through the bone with one tip extending beyond the bone on a first side and the second tip extending beyond the bone on the opposite side.

13. The apparatus of claim 2 and further comprising a saw driver configured to be guided by the first pin through the bone and to drive the saw guided by the saw driver and the second alignment pin through the bone.

14. The apparatus of claim 13 wherein the saw driver includes a shaft 5 adapted to be driven by a rotary drill to rotate about an axis, a body coupled at a first end to the shaft to be rotated thereby about the axis, the body including a second end formed to include teeth adapted to cut through the bone and a wall extending between the first end and the second end, the wall being formed to include a driver surface for engaging the wire saw and driving the same during rotation of the body.

10 15. The apparatus of claim 14 wherein the body includes a cavity formed in the second end and extending into the body toward the first end, the cavity being sized to receive the first alignment pin therein.

16. The apparatus of claim 15 wherein the wire saw forms a loop and the driver surface comprises an annular groove formed in the wall.

15 17. The apparatus of claim 1 and further comprising a saw frame including a shaft adapted to be coupled to an oscillator, a finger coupled to the shaft at one end for movement between a retracted position wherein a second end of the finger is adjacent the shaft and an extended position wherein the second end is displaced from the shaft and wherein the wire saw is coupled to the shaft and the finger adjacent the second 20 end to be tensioned between the shaft and the second finger when the second finger is in the extended position.

18. The apparatus of claim 17 wherein the second finger is formed from a shape memory alloy.

19. The device of claim 1 wherein the first and second alignment pins are configured to allow insertion into the bone through an incision less than six centimeters long.

20. The device of claim 1 wherein the first and second alignment pins
5 are configured to allow insertion into the bone through an incision less than about two centimeters long.

21. The device of claim 1 wherein the first and second alignment pins are configured to allow insertion into the bone through an incision about one centimeter long.

22. A method of resecting a bone of a patient comprising:
10 incising the skin and underlying tissue at a first point overlying the bone with an incision having a length less than six centimeters;
forming a hole through the bone with an instrument inserted through the incision;
inserting a saw through the incision;
15 resecting the bone along the formed hole with the inserted saw.

23. The method of claim 22 and further comprising the steps of providing an alignment pin and inserting the provided alignment pin into the formed hole prior to the resecting step and wherein the resecting step includes the step of guiding the saw with the inserted alignment pin.

20 24. The method of claim 23 further comprising the step of providing a wire saw and wherein the inserting a saw step and the resecting step are performed with the provided wire saw.

25. The method of claim 24 and further comprising the step of inserting an alignment pin into the formed hole prior to the resecting step and wherein the resecting step includes the step of guiding the saw with the inserted alignment pin.

26. The method of claim 22 and further comprising the steps of:
5 incising the skin and underlying tissue at a second point overlying the

bone with an incision having a length less than six centimeters;

forming a second hole through the bone with an instrument inserted through the second incision; and

10 wherein the resecting step is performed to resect the bone along the first and second formed holes.

27. The method of claim 26 and further comprising the steps of providing first and second alignment pins inserting a different one of the provided alignment pins into each of the first and second formed holes prior to the resecting step and wherein the resecting step includes the step of guiding the saw with the inserted 15 alignment pins.

28. The method of claim 22 wherein the incision incised at the first point has a length of less than about two centimeters.

29. The method of claim 22 wherein the incision incised at the first point has a length of about one centimeter.

20 30. An apparatus for resecting a bone comprising:
a wire saw;
a saw driver including a shaft adapted to be driven by a rotary drill to rotate about an axis, a body coupled at a first end to the shaft to be rotated thereby about

the axis, the body including a second end formed to include teeth adapted to cut through the bone and a wall extending between the first end and the second end, the wall being formed to include a driver surface for engaging the wire saw and driving the same during rotation of the body.

5 31. The apparatus of claim 30 and further comprising an alignment pin sized to extend through the bone and wherein the wire saw forms a loop and is configured to engage the driver surface and be driven by the saw driver when it is rotated and driven into the bone.

10 32. The apparatus of claim 31 wherein the wire saw when driven is configured to be guided by the alignment pin when the pin is inserted in the bone.

33. The apparatus of claim 31 wherein the saw driver is configured to be guided by the alignment pin through the bone.

15 34. The device of claim 33 and further comprising a second alignment pin sized to extend through the bone and wherein the wire saw forms a loop and is configured to engage the driver surface and be driven by the saw driver when it is rotated and driven into the bone and wherein the saw is configured to be guided by the saw driver and the second alignment pin through the bone.

20 35. The apparatus of claim 34 wherein the body includes a cavity formed in the second end and extending into the body toward the first end, the cavity being sized to receive the first alignment pin therein.

36. The apparatus of claim 30 wherein the driver surface comprises an annular groove formed in the wall.